

What is claimed is:

1. A process assessment tool for assessing a load a manufacturing process for an industrial product puts on the environment, said process assessment tool comprising:

5 (a) a database for storing data of a first environmental load corresponding to each energy source, whose consumption produces the first environmental load;

(b) a data input unit, into which data of conditions of said manufacturing process for the industrial product is input;

10 (c) a data processing unit for calculating a second environment load said manufacturing process for the industrial product produces by using the data entered into said data input unit and the data stored in said database; and

15 (d) a data output unit for outputting a result said data processing unit calculates.

20 2. The process assessment tool as defined in Claim 1, wherein the energy source is at least one of primary energy sources including natural gas, heavy oil, light oil, lamp oil, gasoline, coal, and wood.

3. The process assessment tool as defined in Claim 1, wherein the energy source is at least one of secondary energy sources including electrical power and town gas, the data of the first environmental load is collected based on one of:

25 i) energy supplier basis; and
ii) energy service area basis.

4. The process assessment tool as defined in Claim 3, wherein the data of the first environmental load is collected based on:

30 (i) power source data collected based on one of energy supplier basis and energy service area basis; and

(ii) data of a third environmental load based on each power

source.

5 5. A process assessment tool for assesses a load a manufacturing process for an industrial product puts on the environment, said process assessment tool comprising:

(a) a database storing data of a first environmental load produced by consumption of a material;

(b) a data input unit, into which an amount of consumption of a necessary material for production of the industrial product is entered;

10 (c) a data processing unit for calculating a second environment load the manufacturing process produces, wherein the data entered into said data input unit and the data stored in said database are used; and

(d) a data output unit for outputting a result said data processing unit calculates.

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6. The process assessment tool as defined in Claim 1, wherein the first environmental load includes data of total energy consumed through stages from mining to use of the energy source.

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7. The process assessment tool as defined in Claim 5, wherein the first environmental load includes data of total energy consumed through stages from mining to use of the energy source.

25 8. The process assessment tool as defined in Claim 1, wherein the first environmental load includes total amount of at least one of environmental load materials, the environmental load materials include carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides (SO_x), and are produced through stages from mining to use of the energy source.

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9. The process assessment tool as defined in Claim 5, wherein the first environmental load includes total amount of at least one of environmental load materials, the environmental load materials include

carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides (SO_x), and are produced through stages from mining to use of a raw material of the material.

5 10. The process assessment tool as defined in one of Claim 1 and Claim 5, wherein said data output unit further shows calculation results for each process, which constitutes said manufacturing process, in a visual form.

10 11. The process assessment tool as defined in Claim 10, wherein said data output unit further shows a second environmental load increasing step by step by undergoing said each process in a cumulative graph.

15 12. The process assessment tool as defined in Claim 10, wherein said each process are divided into classes, said data output unit further shows a second environmental load in a split graph, each part area of the split graph is proportional to amount of the second environmental load of each of the classes.

20 13. The process assessment tool as defined in Claim 10, wherein said data output unit further shows ratios of a plurality of second environmental loads produced in said each process vs. total amount of environmental loads in respective manufacturing process in the graph
25 independently.

 14. A method for a process assessment for an industrial product assessing a load a manufacturing process puts on the environment, by using a database storing data of an environmental load corresponding to
30 each energy source, whose consumption produces the environmental load, said method comprising the steps of:

(a) entering a condition of said manufacturing process for the

industrial product;

(b) calculating a second environmental load said manufacturing process produces, with the condition and data of a first environmental load stored in said database; and

5 (c) displaying a result said step (b) calculates.

15. The process assessment method as defined in Claim 14, wherein the energy source is at least one of primary energy sources which comprises natural gas, heavy oil, light oil, lamp oil, gasoline, coal,
10 and wood.

16. The process assessment method as defined in Claim 14, wherein the energy source is at least one of secondary energy sources which comprises electrical power and town gas, the data of the first
15 environmental load is constructed on one of:

- i) energy supplier basis; and
- ii) energy service area basis.

17. The process assessment method as defined in Claim 14, wherein the data of the first environmental load is constructed by: (i) power source data collected based on one of energy supplier basis and energy service area basis; and (ii) data of a third environmental load, wherein the data is constructed on power source basis.
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25 18. A method for a process assessment for an industrial product assessing a load a manufacturing process puts on the environment, by using a database storing data of an environmental load produced when a material is consumed, said method comprising the steps of:

(a) entering an amount of consumption of a necessary material
30 for production of the industrial product;

(b) calculating a second environmental load said manufacturing process produces, with said amount of consumption of the material and

data of a first environmental load stored in said database; and
(c) displaying a result said step (b) calculates.

19. The process assessment method as defined in Claim 14,
5 wherein the first environmental load includes data of total energy
consumed through stages from mining to use of the energy source.

20. The process assessment method as defined in Claim 18,
wherein the first environmental load includes data of total energy
10 consumed through stages from mining to use of the energy source.

21. The process assessment method as defined in Claim 14,
wherein the first environmental load includes total amount of at least one
of environmental load materials, the environmental load materials
15 include carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides
(SO_x), and are produced through stages from mining to use of the energy
source.

22. The process assessment method as defined in Claim 18,
20 wherein the data of the first environmental load includes total amount of
at least one of environmental load materials, the environmental load
materials include carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur
oxides (SO_x), and are produced through stages from mining to use of a
raw material of the material.

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23. The process assessment method as defined in one of Claim 14
and Claim 18, wherein said step (c) further shows calculation results for
each process, which constitutes said manufacturing processes, in a
visual form.

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24. The process assessment method as defined in Claim 23,
wherein said step (c) further shows a second environmental load in a

cumulative graph, the second environmental load increasing step by step by undergoing said each process.

25. The process assessment method as defined in Claim 23,
5 wherein said each process are divided into classes, said step (c) further shows a second environmental load in a split graph, each part area of the split graph is proportional to amount of the second environmental load of each of the classes.

10 26. The process assessment method as defined in Claim 23, wherein said step (c) further shows a ratios of a plurality of the second environmental loads produced in said each process vs. the total amount of environmental loads in respective manufacturing processes in the graph independently.

15 27. A computer readable storage medium containing program instructions for operating a computer to perform a method for a process assessment, wherein said method assesses a load a manufacturing process puts on the environment by using a database storing data of an
20 environmental load corresponding to each energy source, whose consumption produces the environmental load, said method comprising the steps of:

(a) entering a condition of said manufacturing process for the industrial product;

25 (b) calculating a second environmental load said manufacturing process produces, with the condition and data of a first environmental load stored in said database; and

(c) displaying a result said step (b) calculates.

30 28. The computer readable storage medium as defined in Claim 27, wherein the energy source is at least one of primary energy sources which comprises natural gas, heavy oil, light oil, lamp oil, gasoline, coal,

and wood.

29. The computer readable storage medium as defined in Claim 27, wherein the energy source is at least one of secondary energy sources which comprises electrical power and town gas, the data of the first environmental load is constructed on one of:

- i) energy supplier basis; and
- ii) energy service area basis.

30. The computer readable storage medium as defined in Claim 27, wherein the data of the first environmental load is determiningd on a basis of: (i) power source data collected based on one of energy supplier basis and energy service area basis; and (ii) data of a third environmental load, wherein the data is constructed on power source basis.

31. A computer readable storage medium wherein said method assesses a load a manufacturing process for a industrial product puts on the environment by using a database storing data of an environmental load produced when a material is consumed, said method comprising the steps of:

- (a) entering an amount of consumption of a necessary material for production of the industrial product;
- (b) calculating a second environmental load said manufacturing process produces with the amount of consumption of the material and data of a first environmental load stored in said database; and
- (c) displaying a result said step (b) calculates.

32. The computer readable storage medium as defined in Claim 27, wherein said computer makes said program perform a method for a process assessment, wherein the first environmental load includes data of total energy consumed through stages from mining to use of the energy source.

33. The computer readable storage medium, as defined in Claim 31, wherein the first environmental load includes data of total energy consumed through stages from mining to use of the energy source.

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34. The computer readable storage medium as defined in Claim 27, wherein the first environmental load includes total amount of at least one of environmental load materials, the environmental load materials include carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides (SO_x), and are produced through stages from mining to use of the energy source.

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35. The computer readable storage medium as defined in Claim 31, wherein the first environmental load includes total amount of at least one of environmental load materials, the environmental load materials include comprises carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur oxides (SO_x), and are produced through stages from mining to use of a raw material of the material.

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36. The computer readable storage medium as defined in on of Claim 27 and Claim 31, wherein said step (c) further shows calculation results for each process which constitutes said manufacturing processes, in a visual form.

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37. The computer readable storage medium as defined in Claim 36, wherein said step (c) further shows a second environmental load increasing step by step by undergoing said each process in a cumulative graph.

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38. A computer readable storage medium as defined in Claim 36, wherein said each process is divided into classes, said step (c) further shows a second environmental load in a split graph, each part area of the

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split graph is proportional to amount of the second environmental load of each of the classes.

39. A computer readable storage medium as defined in Claim 36,
5 wherein said step (c) further shows ratios of a plurality of second
environmental loads produced in said each process vs. total amount of
environmental loads in respective manufacturing processes in the graph
independently.

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